84TH CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
2d Session } { No. 2386

PROHIBITING TRANSPORTATION OF WATER-HYACINTHS

JUNE 19, 1956.—Referred to the House Calendar and ordered to be printed

Mr. WILLIS, from the Committee on the Judiciary, submitted the following

REPORT

[To accompany H. R. 11636]

The Committee on the Judiciary to whom was referred the bill (H. R. 11636) to amend chapter 3 of title 18 United States Code relating to animals, birds, and fish, having considered the same, report favorably thereon without amendment and recommend that the bill do pass.

PURPOSE

The purpose of this bill is to make it a criminal offense to transport, sell, or advertise for sale, in interstate commerce, water-hyacinth plants, waterchestnut plants, or alligator grass.

STATEMENT

The water-hyacinth is indeed a very beautiful plant, producing a flower of unmatched beauty. At the same time, however, it is a menace to agriculture, industry, and wildlife, and a comprehensive program has been underway to provide for its progressive control and eradication from the rivers, channels, streams, and other allied waters such as lakes, ponds, bayous, marshes, swamps, etc. in the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. Its clogging of navigable streams and other waterways has caused heavy losses to commercial fishermen and trappers, greatly handicapped the oil and logging industries, suffocated game fish, and driven wild fowl from their winter nesting grounds. In the State of Louisiana alone the depredations of the water-hyacinth have been estimated by the Louisiana State Department of Wildlife and Fisheries at $55 to $65 million per year.

The water-hyacinth is a fresh water, free-floating plant with bulb-like bases and a bushy mass of fibrous roots. The plants grow together in a floating mat so dense that its wet weight per acre reaches 180 tons,

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and so buoyant that some can support a man's weight. Moving with the wind and currents, these mats have spread with devastating effect through the eight States enumerated above. Efforts, as will be pointed out, have been made to curtail their spread into other areas. Unfortunately, however, many tourists, in traveling through the already affected States, pick the hyacinths with their beautiful flower, and send them through the mails and via other means of transportation, to other States.

A program is underway in which the Corps of Engineers, in the interest of navigation, has been cooperating with several States in keeping navigable streams open to navigation. In addition, the House Committee on Public Works has made an intensive investigation into ways and means of completely eradicating these obnoxious aquatic plants. At the hearings before that committee, it was pointed out that it would be pointless to seek to eradicate this menace in the eight States which are present substantially affected, and permit, at the same time, the spread of the hyacinth, waterchestnut, and alligator grass plants into other States. It was therefore proposed that the instant legislation be introduced, prohibiting the transportation, sale, or advertisement for sale of these plants in interstate commerce.

Attached hereto is an interim report of the Department of the Army dated July 18, 1949, to the Chief of Engineers, United States Army, on water-hyacinth obstructions.

DEPARTMENT OF THE ARMY,
BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., July 18, 1949.

800.84 (Water-Hyacinth Obstructions).
Subject: Water-Hyacinth Obstructions.
To: The Chief of Engineers, United States Army.

1. This interim report is submitted in response to the following resolution adopted February 6, 1945.

"*Be it resolved by the Committee on Rivers and Harbors of the House of Representatives, United States,* That the Board of Engineers for Rivers and Harbors created under section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby requested to review the reports on water-hyacinth obstructions submitted in House Document No. 91, 55th Congress, 3d session, with a view to determining (*a*) whether any expansion of the scope of operations, or any change in the method now employed, for exterminating and removing the hyacinth plants and other marine vegetable growths from the waters of Louisiana, and such other States as are affected, is advisable at this time; (*b*) the nature and extent of the various public benefits that would accrue from such extermination and removal; and (*c*) the amount of local cooperation that may be warranted by reason of the local benefits; be it further

"*Resolved,* That this action be taken with the view of determining the estimated cost of permanently eliminating the hyacinth plants and other marine vegetable growths from these streams, and that the cooperation of the Fish and Wildlife Service of the Department of the Interior, and the Department of Agriculture and the United States Public Health Service be solicited, since the aforementioned obstruction of such streams affects the fishing industry, agriculture and health conditions."

It is also in review of the interim reports on Lake Okeechobee and its tributary streams, Florida, with a view to removing the water-hyacinth, authorized by the River and Harbor Act approved March 2, 1945. Due to the nature of the problems involved it is not possible to present a final plan for eradication of marine plant growths without further extensive research and field operations. For this reason, an interim report is submitted recommending a 5-year program of increased scope of operations in the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. Based on experience gained through this program a final report under the authorization will be submitted at a later date.

2. This report is based on data contained in 3 field committee reports covering the 3 Corps of Engineers' divisions along the gulf coast. Each committee was composed of four members consisting of a representative of the Corps of Engineers, who served as chairman, and a representative of each of the Federal agencies, the Fish and Wildlife Service of the Department of the Interior, the Department of Agriculture, and Public Health Service. Each report is signed by all members of the committee and represents the coordinated views of the participating agencies. The three field committee reports are attached hereto as appendices.

3. The water-hyacinth is a fresh-water free-floating plant with bulblike leaf bases and a bushy mass of fibrous roots 6 to 24 inches long. It has dark green leaves and a spike of lavender flowers, and is variable as to form and size. After 24 to 48 hours, the flower fades and the stalk bends so as to thrust the flower spike with its seed pods under the water surface. After ripening, the seeds are released and either settle to the bottom of the water or become enmeshed in the mat of floating vegetation. They may remain viable under water for 7 years or more. Two crops of plants will mature directly from the seeds during warm weather months, and a third crop will be in such condition as to mature early in the following spring. The principal method of reproduction is by stolons which develop rapidly into healthy plants that generally break away from the parent plant and emit their own individual stolons. The plants have a water content of 94 percent. They form a dense mat on the water and are capable of doubling in area every month of the growing season. They will not survive in salt water.

4. The alligator weed is a vinelike plant that spreads over both land and water. The leaves are large and succulent in the early spring and somewhat smaller in the late summer. The flowers are whitish and somewhat like clover. The plant propagates entirely from fragmentation of the stems and roots as normally it does not produce seed in the latitude of the United States. The stems branch and rebranch and when on water form a dense mat that may extend 15 to 25 feet from the bank. The plant occurs in fresh waters, swamps, marshlands, and other lowlands adjacent to streams and bayous. It will also survive and grow in brackish waters.

5. The water-hyacinth and alligator weed occur in Florida, Alabama, Mississippi, Louisiana, and Texas. There is also some evidence of the existence of the water-hyacinth in Georgia, and of the alligator weed in South Carolina and the Tennessee Valley. The thick mats formed on the water surface, frequently extending from bank to bank, become a menace to navigation, flood control, drainage, and fish and wildlife. In many localities, navigation must cease until the waterways are

cleared. The mats clog vessel propellers, shafts, cooling systems, and rudders; cause jams at bridges; and increase navigation hazards for all traffic by masking floating logs and snags. They retard runoff thereby interfering with flood control and drainage; impede and often block pump intakes thereby adversely affecting irrigation; deplete the oxygen in the water and thus adversely affect fish and wildlife; and interfere with the utilization of resources that furnish recreation, food, and a livelihood to many hunters, fishermen, and trappers. The average annual damage caused by the growths in Louisiana alone amounts to $37,993,000 of which $19,557,000 is to agriculture as a result of the adverse effects on flood control and drainage, $14,727,000 to fish and wildlife, $1,875,000 to navigation, $1,584,000 to drainage systems, and $250,000 to public health. The total average annual damage in Florida, Alabama, Georgia, and Mississippi amounts approximately to $5,000,000.

6. The existing project authorized by Congress in 1899 and subsequently modified provides for the destruction or removal of the water hyacinth in the navigable waters of Florida, Alabama, Mississippi, Louisiana, and Texas, so far as they constitute an obstruction to commerce, using any mechanical, chemical, or other means whatsoever, except that in Florida the act of 1905 prohibits the use of chemicals injurious to cattle; for the construction and operation of boats equipped with machinery suitable for such destruction or removal; and for the use of booms to close sloughs and backwaters and prevent the plants from drifting from one stream to another. In the States of Florida, Alabama, and Mississippi, the total cost to June 30, 1948, has been $1,344,869, all charged to maintenance. The average annual cost during the past 5 years has been $68,399 which has served only to keep the principal navigable waterways reasonably clear for navigation. In Louisiana, expenditures to June 30, 1919, totaled $328,200, and since that date they have increased from $18,066 for the fiscal year 1920 to an estimated $407,900 for the fiscal year 1949. In 1907 an allotment of $500 was made by the Federal Government for removal of water-hyacinths from Buffalo Bayou and areas in the vicinity of Houston, Tex. No Federal expenditures for this purpose have been made in Texas since 1909. Local interests in Texas have expended more than $13,000 attempting to exterminate the water-hyacinth in scattered areas.

7. Local interests desire complete control of the water-hyacinth and alligator weed in order that an end may be made to the widespread damage which these aquatic plants cause.

8. Methods of attacking the water-hyacinth and alligator weed in navigable waters have been developed largely by the Corps of Engineers and are now used in maintenance operations. They include drifting or floating the plants to salt water, booms and barricades, heavy-duty roll-crushers or destroyers, saw-boat destroyers, and chemicals, as described below:

(*a*) By drifting and floating, the growth is cut from its anchorage to the streambank and into maneuverable sizes by a saw boat, and then started downstream with the current on its way to salt water and destruction. This method is cheap and large quantities of vegetation can be moved under favorable conditions.

(*b*) Booms and barricades are used to trap the vegetation in secondary streams where it can be destroyed at the convenience of the

destruction units. The barricade consists of small cypress piles driven on 5-foot centers. The structure is installed just beyond the channel limits in wide, shallow, lake areas to prevent the vegetation from drifting into the waterway. Where feasible, similar structures are installed across the entrances of tributaries. When secondary waterways are used for navigation, swinging floating booms are employed which can be opened and closed at will. These devices, although physically effective, have not always been entirely satisfactory because they interfere with the use of the streams by trappers, fishermen, oil prospectors, moss pickers, and others.

(*c*) The heavy-duty roll-crusher or destroyer developed by the Corps of Engineers is a large self-propelled unit with a conveyor mounted over the bow of the steel hull, its lower end submerged so as to lift the vegetation from the water as the machine advances up the infested stream. Cutoff saws mounted on each side of a 15-foot conveyor just forward of the pickup point cut the mat into the proper width for effective feeding of the conveyor. The vegetation is deposited in a hopper from which it is fed between two heavy rollers and crushed. The refuse is then dropped onto a cross conveyor under the rollers and carried over the side of the hull back into the water in form of sludge. The plants are physically injured to the extent that further growth or regrowth is impossible and the residue quickly sinks to the bottom to decay. In Louisiana, the cost of clearing by this method has averaged about $40 per acre.

(*d*) The saw-boat destroyer operates somewhat as a seagoing lawn mower. The equipment developed and improved by the Corps of Engineers and used principally in Florida consists of a specially built boat about 17 feet long, with a beam of 6 feet. Mounted on outriggers across the bow of the boat is a horizontal axle carrying a group of cotton-gin circular saws about 12 inches in diameter, spaced five-eighths of an inch apart. A bank of similar saws is bracketed at each side of the stern. Four 18-inch-diameter saws are mounted on the forward axle, 1 at each end and 2 in the middle, to cut through the roots and section the matted mass into strips, facilitating the passage of the boat. The forward bank of saws cuts a swath 6 feet wide and each stern bank cuts one 3 feet wide. With overlap, the total width of cut is about 10 feet. The saws are spun at about 1,000 revolutions per minute by a 50-horsepower gasoline engine. The whirling saws shred the hyacinth leaves and rhizomes, leaving behind a floating mass of shredded material which decomposes and sinks to the bottom in about 2 weeks. In ordinary operation, an initial kill of 95 percent of the material cut over has been realized. The equipment used in Louisiana is about 20 feet wide, has a capacity of 10,000 square yards per hour, and requires a pusher boat. It tears and bruises the heaviest portions of the plants which quickly sink to the bottom and decay. The machine is effective in opening waterways quickly and preparing the way for chemical destruction of the fringes which cannot be reached by mechanical means. Depending on the size and density of the plants, the cost of clearing may vary from $3.50 to $35 per acre.

(*e*) The most effective weed-killing chemical yet discovered, which is nontoxic to humans and animals, is 2,4-dichlorophenoxyacetic acid, commonly called 2,4-D. It is mixed with water or a light fuel oil and sprayed on the plants which wither and die after 2 or 3 applications over a period of 2 to 4 weeks. Spraying from airplanes has been

90014°—57 H. Rept., 84-2, vol. 3——63

accomplished successfully where large areas of plants exist. For fringes and inaccessible areas, spraying is accomplished more economically from boats. Under favorable conditions and with careful and effective application, an initial kill of 90 percent or over may be secured. Care must be exercised so that crops and other vegetation are not damaged. The cost varies from $10 to $30 per acre. Extensive experimentation on this method of attack has been carried out by local interests, the Department of Agriculture, and the Corps of Engineers.

9. Under the existing authorization, the scope of the work is limited to combating the water-hyacinth on navigable waters where navigation is obstructed. For any program leading to the permanent eradication of obnoxious aquatic plants, the scope of the work should be expanded to include all such plants in any locality where they exist. As outlined above, the annual damage caused by these plants in Louisiana alone has averaged nearly $38 million and the annual cost of combating the growths has increased from $18,000 in 1920 to an estimated $407,900 for the fiscal year 1949. It is therefore reasonable to assume that unless some method is developed which will lead to the ultimate eradication, or at least widespread control, of the obnoxious aquatic growths, the cost of clearing the navigable waters will steadily increase.

10. The plan which at this time appears the most suitable provides for a continuation of the methods presently employed supplemented by additional methods which may be developed in cooperation with other Federal, State, and local agencies. It is believed that improved procedures and techniques can be evolved so that after a few years a more precise determination can be made of the required scope and cost of the final program Such an interim program can be achieved with moderately increased appropriations and authorities and it is believed that substantial progress can be made during this period. The plan includes the early attack on and eradication of the scattered infestations in Texas, Georgia, and other States before they become a costly problem. The success of any method of permanently eradicating the obnoxious aquatic growths, however, is dependent upon the enactment of adequate laws to prohibit the sale and transportation of the plants, and expansion of the existing authorization to include the eradication of all obnoxious aquatic plants in any locality where such plants exist.

11. The Board concludes that present information is sufficient to justify the expansion of the scope of operations for 5 years for extermination of the water hyacinth, alligator weed, and other obnoxious aquatic plants; that large benefits will result in the interest of navigation and commerce, flood control, drainage, agriculture, fish and wildlife conservation, public health, and allied interests; that no fixed conditions of local cooperation should be imposed, but that the Chief of Engineers should be authorized to prescribe such conditions of local cooperation as in his discretion may be proper; and that the States affected should be encouraged to enact laws prohibiting the sale and transportation within their boundaries of obnoxious aquatic plants.

12. Accordingly, the Board of Engineers for Rivers and Harbors recommends modification of the existing project to provide for control and progressive eradication of the water-hyacinth, alligator weed, and other obnoxious aquatic plant growths from the navigable waters,

tributary streams, connecting channels, and other waters and areas in the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas, at an estimated cost to the United States of $1,520,000 annually for 5 years, to be administered by the Corps of Engineers, Department of the Army, in cooperation with other Federal, State, and local governmental agencies, all generally in accordance with the methods set forth in this report and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable subject to the provision that the Chief of Engineers may require such local cooperation as he may deem appropriate.

R. C. CRAWFORD,
Major General, Chairman
(For the Board).

Inclosures returned, no change.

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